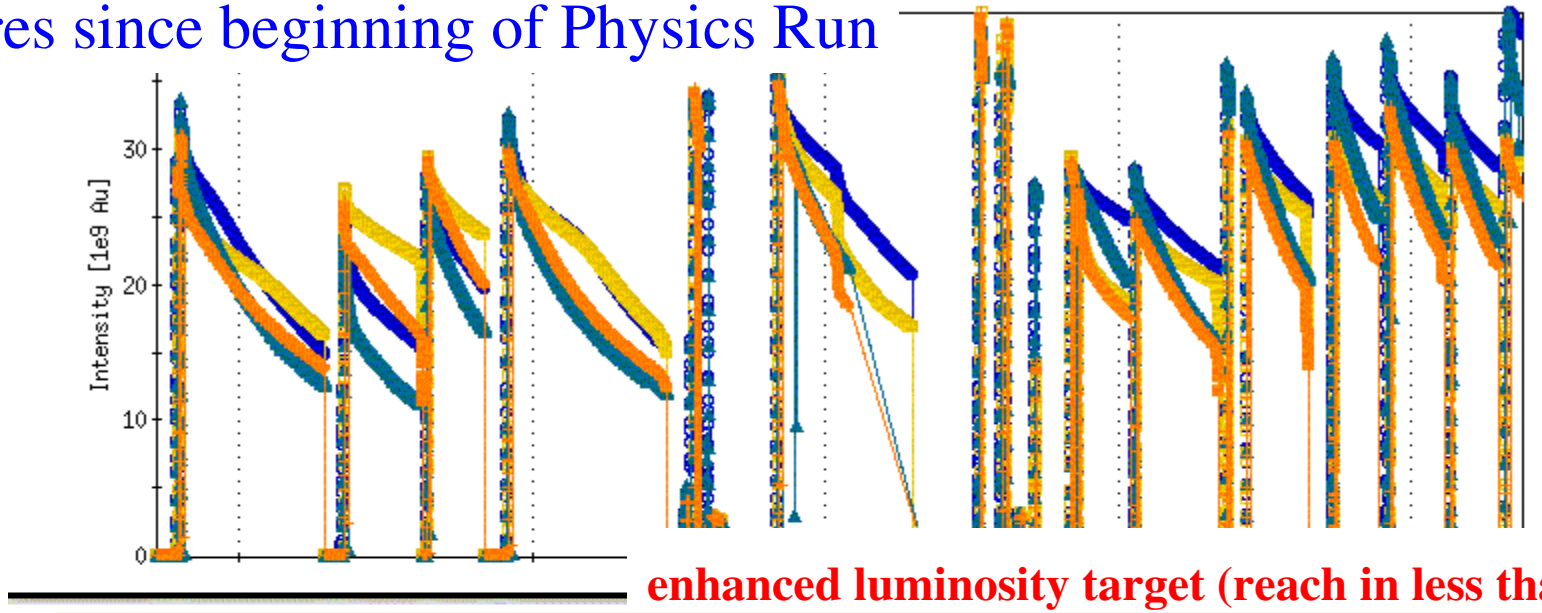
Progress during last week:

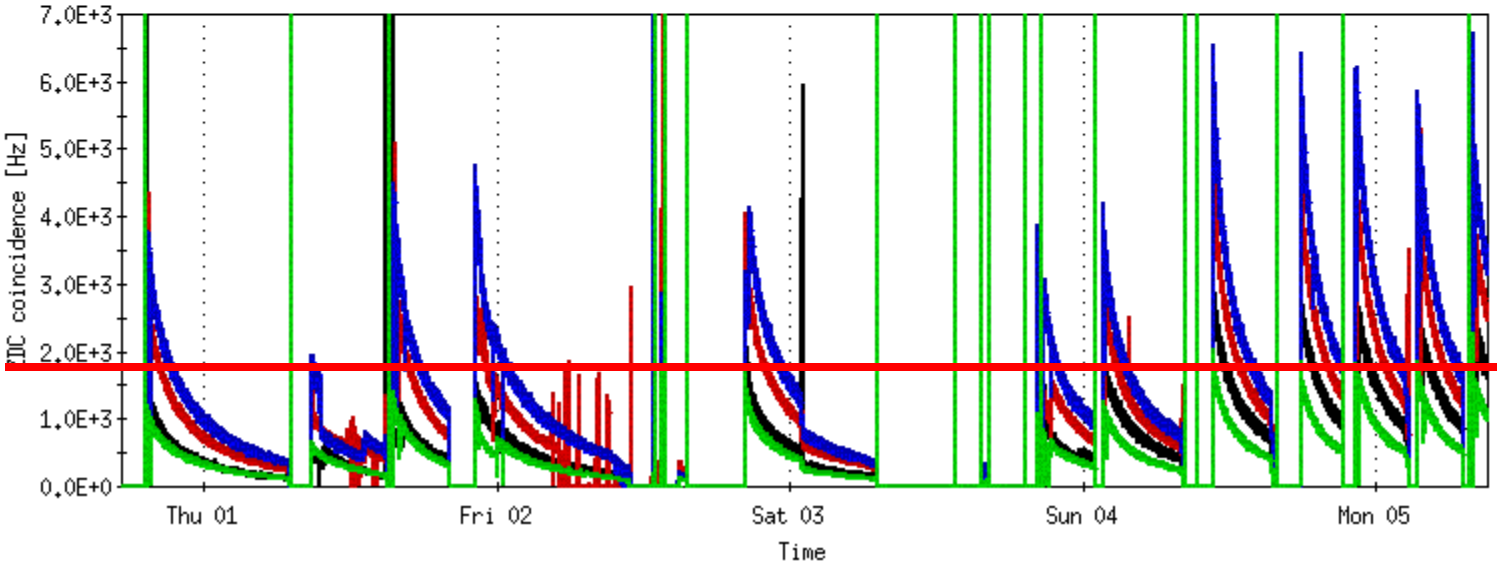
Physics Run started on 31 December 2003 (1 week earlier than planned)

1. Storage RF operational (3 cavities/ring)
   → Was requirement to start Physics Run
2. Automatic steering in operation (Angelika, Ted, …)
   → Currently 1 IP at a time (multiple IPs soon), total steering time ~10min
3. Automatic store stone orbit correction (Vadim)
   → More reproducible store orbits
4. Automatic collimation in operation (Angelika, Wenge, …)
   → Background reduction for experiments

Stores since beginning of Physics Run

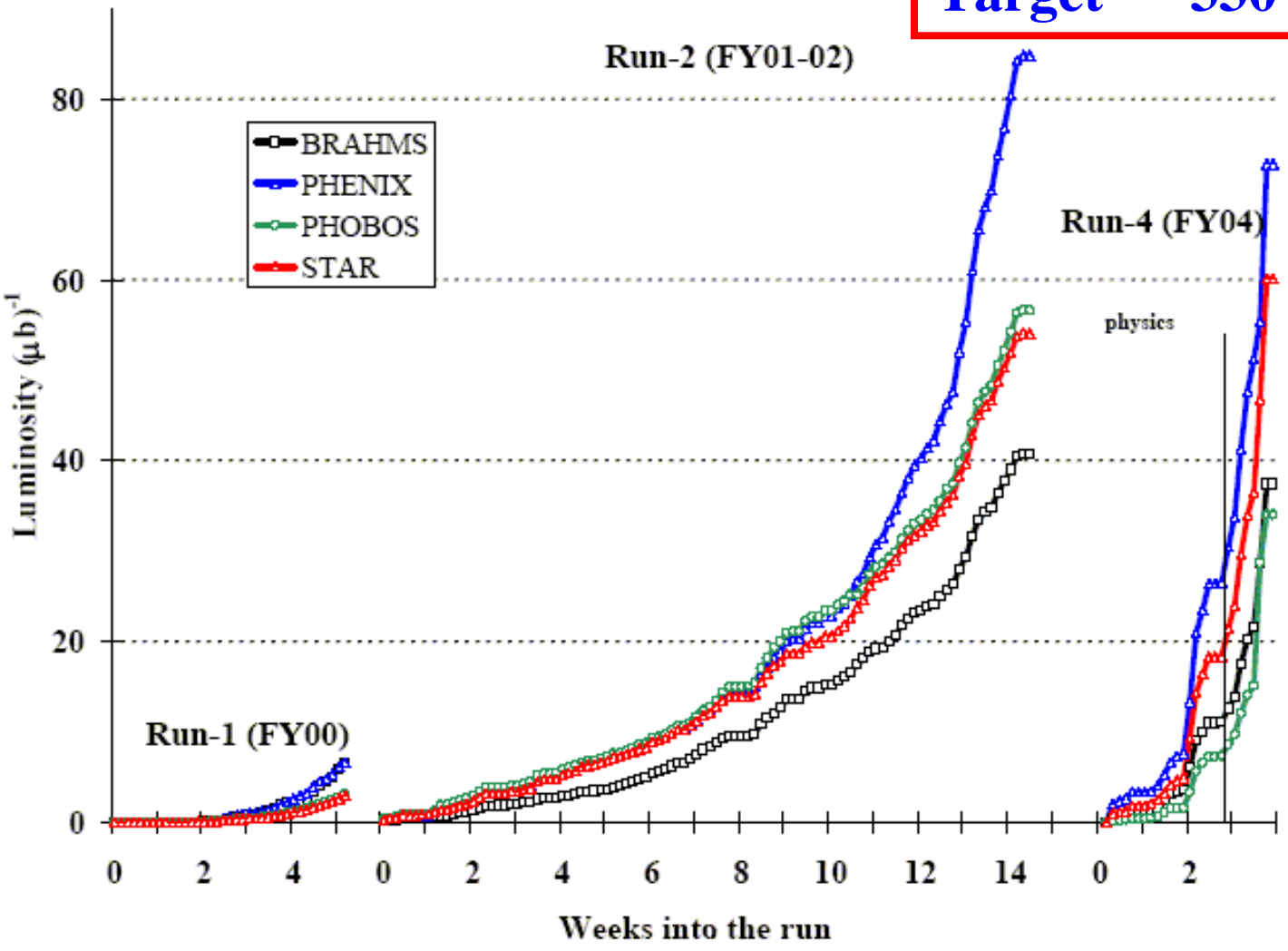


enhanced luminosity target (reach in less than 5yrs)



design lumi

Delivered 72.8 $(\mu b)^{-1}$ to Phenix
46.3 $(\mu b)^{-1}$ last week
Target 330 $(\mu b)^{-1}$



Star ×0.9
Phobos ×0.3
Brahms ×0.3

BROOKHAVEN NATIONAL LABORATORY

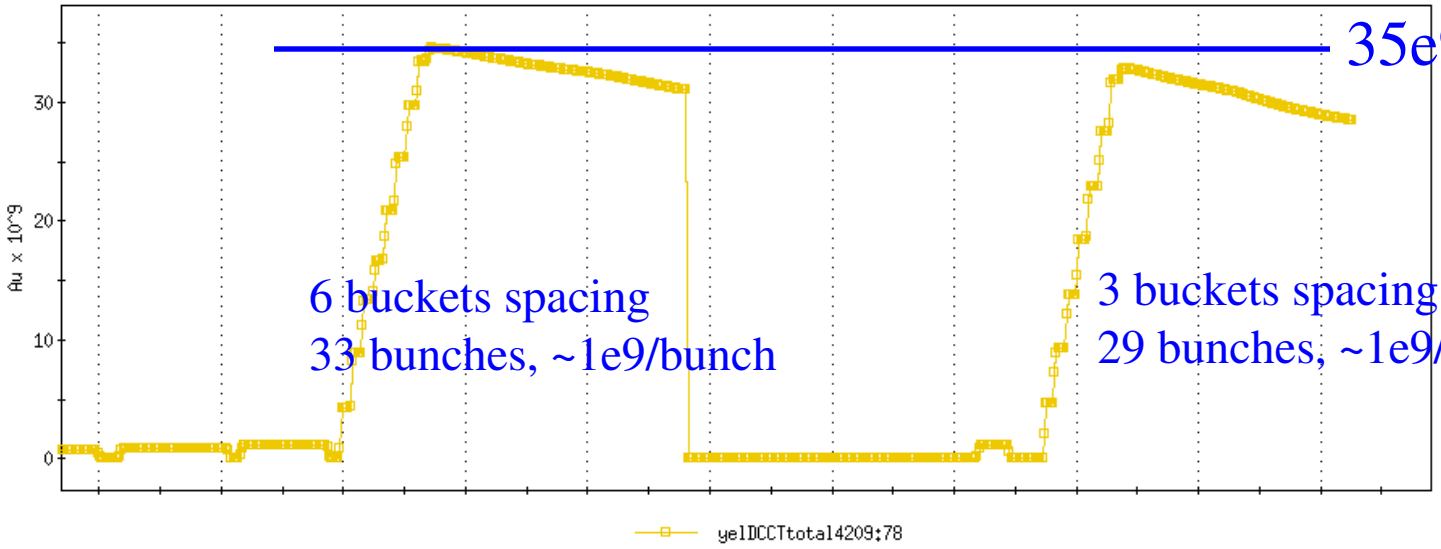
Strategy for luminosity increase:

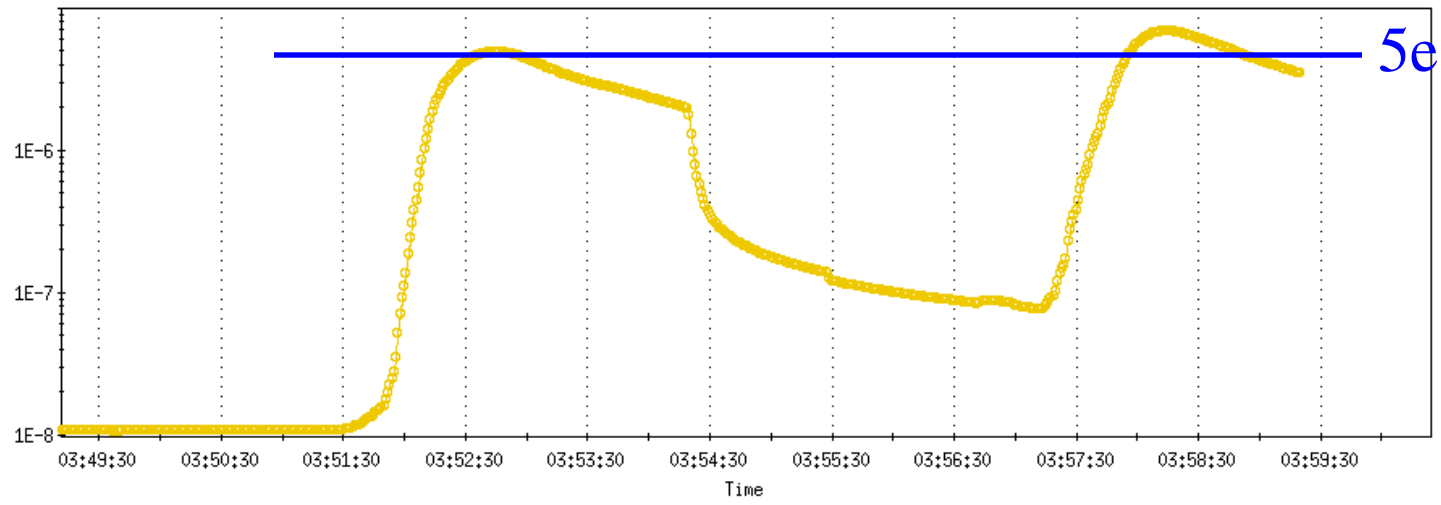
1. Parameters within existing machine limits

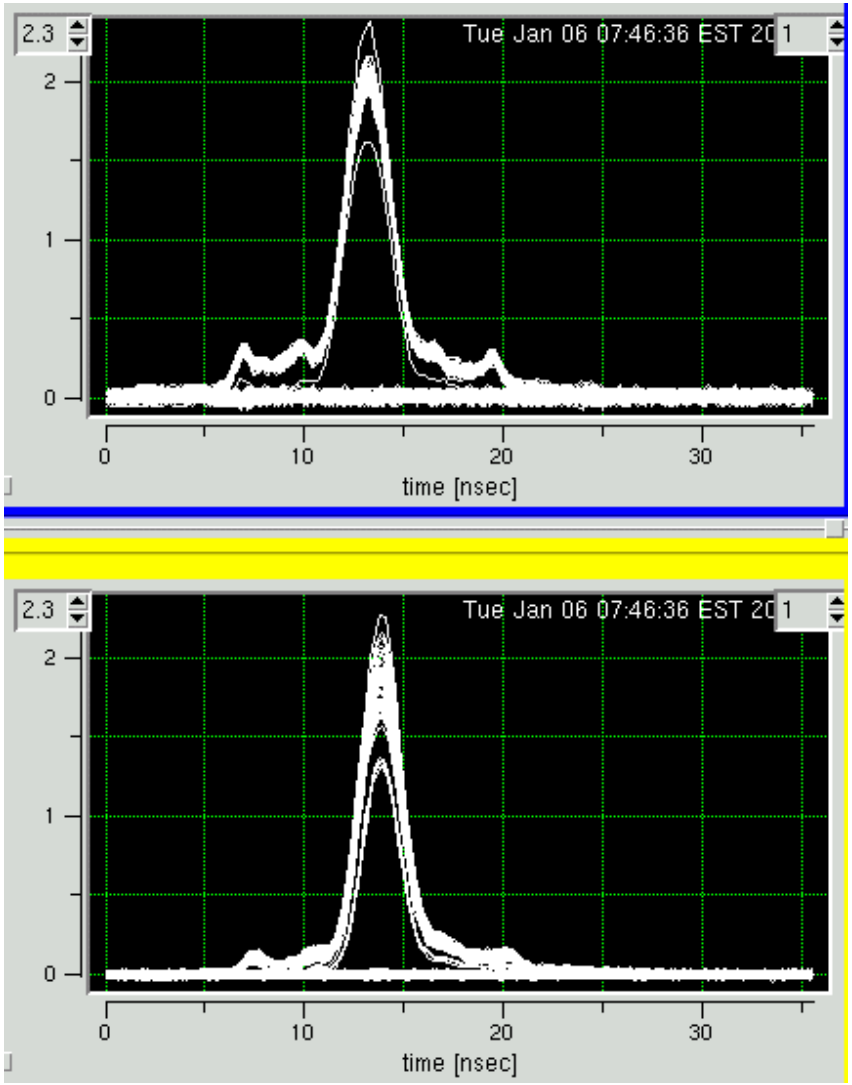
- Bunch intensity, bunch number, other
  (changed collision pattern today: 56 collisions per turn for Phenix/Brahms, 52 for Star/Phobos)
- Time scale: stores or days

2. Increase or remove of machine limits

- Yellow: vacuum in IR4
  → Baking, start 1/13/04 3pm, beam restart 8am next day?
  → May yield extra 15 $(\mu b)^{-1}$/week
- Blue: bunch intensity, IBS, instabilities, vacuum in IR8
  → more storage rf, Landau cavities, Booster merge, streamlined injection process
- Time scale: weeks or months


35e9 Au ions
6 buckets spacing
33 bunches, ~1e9/bunch
3 buckets spacing
29 bunches, ~1e9/bunch
Au x 10^9
30
20
10
0
yelDCCTtotal4209:78


5e-6 Torr
1E-6
1E-7
1E-8
03:49:30
03:50:30
03:51:30
03:52:30
03:53:30
03:54:30
03:55:30
03:56:30
03:57:30
03:58:30
03:59:30
Time



Blue beam:

- 30% more intensity
- 3-10 min longer at injection

→ IBS enlarges longitudinal emittance

→ Rebucketing less perfect